

CLAIMS

What is claimed is:

1. An electro-optical device, comprising:
  - an electro-optical panel substrate;
  - an electronic part mounted on said electro-optical panel substrate; and
  - a holding member disposed along said electro-optical panel substrate so as to cover said electro-optical panel substrate;
  - wherein said electronic part is positioned so as to protrude from said electro-optical panel substrate;
  - and wherein said holding member is provided with a storing portion for storing said electronic part.
2. An electro-optical device according to Claim 1, wherein said holding member is configured so as to function as a light guide.
3. An electro-optical device according to Claim 2, wherein said holding member further comprises a light source storing portion for storing a light source.
4. An electro-optical device according to Claim 1, wherein areas surrounding a mounting area of said electronic part on said electro-optical panel substrate are covered with a protective material having a flat face.
5. An electro-optical device, comprising:

an electro-optical panel substrate;

an electronic part mounted on said electro-optical panel substrate; and

a holding member disposed along said electro-optical panel substrate so as to cover said electro-optical panel substrate;

wherein said electro-optical panel substrate is covered with a protective material having a flat face;

and wherein said electronic part is positioned so as to protrude from said protective material on said electro-optical panel substrate;

and wherein said holding member is provided with a storing portion for storing said electronic part.

6. An electro-optical device according to Claim 5, wherein said holding member is configured so as to function as a light guide.

7. An electro-optical device according to Claim 6, wherein said holding member further comprises a light source storing portion for storing a light source.

8. An electro-optical device, comprising:

an electro-optical panel substrate;

an electronic part mounted on said electro-optical panel substrate; and

a holding member disposed along said electro-optical panel

substrate so as to cover said electro-optical panel substrate;

wherein a plurality of said electronic parts are mounted on said electro-optical panel substrate;

and wherein said plurality of electronic parts are positioned so as to protrude from said electro-optical panel substrate;

and wherein said holding member is provided with a storing portion for storing said plurality of electronic parts.

9. An electro-optical device according to Claim 8, wherein said holding member is configured so as to function as a light guide.

10. An electro-optical device according to Claim 9, wherein said holding member further comprises a light source storing portion for storing a light source.

11. An electro-optical device according to Claim 8, wherein a plurality of said storing portions are provided corresponding to said plurality of electronic parts.

12. An electro-optical device according to Claim 11, comprising a plurality of said electronic parts having mutually different shapes or dimensions, and comprising a plurality of said storing portions configured with mutually different shapes or dimensions so as to match the forms of the corresponding electronic parts.

13. An electro-optical device according to Claim 8, wherein said storing portion is configured so as to store said plurality of electronic parts together.

14. An electro-optical device according to Claim 13, wherein said storing portion is configured having a groove shape.

15. An electro-optical device, comprising:  
an electro-optical panel substrate;  
an electronic part mounted on said electro-optical panel substrate; and  
a holding member disposed along said electro-optical panel substrate so as to cover said electro-optical panel substrate;  
wherein said electronic part is positioned so as to protrude from said electro-optical panel substrate;  
and wherein said holding member is provided with an abutting portion which abuts said electro-optical panel substrate for positioning, and a storing portion for storing said electronic part in a state wherein said electro-optical panel substrate is positioned by said abutting portion.

16. An electro-optical device according to Claim 15, wherein said holding member is configured so as to function as a light guide.

17. An electro-optical device according to Claim 16, wherein said

holding member further comprises a light source storing portion for storing a light source.

18. An electro-optical device according to Claim 15, wherein said holding member comprises an elastic holding portion for holding said electro-optical panel substrate in a state abutted against said abutting portion.

19. An electro-optical device according to Claim 15, wherein said holding member is provided with a recessed structure for storing said electro-optical panel substrate, containing said abutting portion.

20. An electro-optical device, comprising:  
an electro-optical panel substrate;  
an electronic part mounted on said electro-optical panel substrate;  
a holding member disposed along said electro-optical panel substrate so as to cover said electro-optical panel substrate, said holding member functioning as a light guide; and  
a circuit board positioned along said holding member;  
wherein said electronic part is positioned so as to protrude from said electro-optical panel substrate;  
and wherein a light source is mounted to said circuit board so as to protrude toward the side of said holding member;  
and wherein said holding member is provided with a storing

portion for storing said electronic part, and a light source storing portion for storing said light source.

21. An electro-optical device according to Claim 20, wherein said light source storing portion is configured so as to accommodate said light source from the opposite side of said electro-optical panel substrate as said holding member.

22. An electro-optical device according to Claim 21, wherein said light source storing portion is assembled in a state with said light source stored therein.

23. An electro-optical device, comprising:  
an electro-optical panel substrate;  
a first electronic part mounted on said electro-optical panel substrate; and  
a holding member disposed along said electro-optical panel substrate so as to cover said electro-optical panel substrate;  
wherein said electronic part is positioned so as to protrude from said electro-optical panel substrate;  
and wherein said holding member is provided with a storing portion for storing another electronic part at an area adjacent to said electronic part.

24. An electro-optical device according to Claim 23, wherein said other electronic part is attached to said storing portion.

25. An electro-optical device, comprising:  
an electro-optical panel substrate;  
an electronic part mounted on said electro-optical panel substrate; and  
a circuit board disposed along said electro-optical panel substrate so as to cover said electro-optical panel substrate;  
wherein said electronic part is positioned so as to protrude from said electro-optical panel substrate;  
and wherein another electronic part is mounted to said circuit board at an area adjacent to said electronic part.

26. An electro-optical device according to Claim 25, wherein a holding member is positioned between said electro-optical panel substrate and said circuit board, said holding member comprising a storing portion for storing said electronic part and said other electronic part adjacent thereto.

27. An electro-optical device according to Claim 25, wherein said holding member has a light-guiding function.

28. An electro-optical device according to Claim 27, wherein said other electronic part is a light source.

29. An electro-optical device according to Claim 25, wherein one of said electronic part and said other electronic part is positioned between a pair of the other.

30. A method for manufacturing an electro-optical device, said method comprising:

mounting an electronic part on an electro-optical panel substrate; and

disposing a holding member along said electro-optical panel substrate so as to cover said electro-optical panel substrate;

wherein said holding member is provided beforehand with a storing portion for storing said electronic part, and wherein said holding member is positioned such that said storing portion accommodates said electronic part.

31. A method for manufacturing an electro-optical device according to Claim 30, wherein said storing portion accommodates said electronic part in the state that an abutting portion of said holding member which abuts said electro-optical panel substrate for positioning, is abutting said electro-optical panel substrate.

32. A method for manufacturing an electro-optical device according to Claim 30, wherein said electro-optical panel substrate is covered with a protective material following mounting said electronic part on said electro-optical panel substrate.

33. A method for manufacturing an electro-optical device according to Claim 32, wherein said protective material in an unhardened state is applied onto said electro-optical panel substrate, following which said protective material is subjected to smoothing processing for smoothing and subsequently hardened.

34. A method for manufacturing an electro-optical device according to Claim 33, wherein said smoothing processing is performed by inclining said electro-optical panel substrate to cause applied said protective material to flow.

35. A method for manufacturing an electro-optical device according to Claim 33, wherein said applied protective material is mechanically smoothed.

36. A method for manufacturing an electro-optical device according to Claim 32, wherein a sheet-shaped protective material is

positioned on said electro-optical panel substrate, following which said sheet-shaped protective material is either dissolved or softened, and following which said protective material is hardened.

37. A method for manufacturing an electro-optical device according to Claim 36, wherein said sheet-shaped protective material is provided with an opening at the mounting area of said electronic part on said electro-optical panel substrate.

38. A method for manufacturing an electro-optical device, said method comprising:

mounting an electronic part on an electro-optical panel substrate; and

disposing a circuit board along said electro-optical panel substrate so as to cover said electro-optical panel substrate;

wherein, another electronic part is mounted to an area adjacent to said electronic part on said circuit board, and said circuit board is disposed along said electro-optical panel substrate such that said electronic part and said other electronic part are positioned adjacently.

39. A method for manufacturing an electro-optical device according to Claim 38, wherein a holding member provided with a storing portion for storing said electronic part and said other electronic part

adjacent thereto is disposed between said electro-optical panel substrate and said circuit board.

40. A method for manufacturing an electro-optical device according to Claim 38, wherein both said electronic part and said other electronic part are mounted such that one electronic part is positioned between a pair of the other electronic part.

41. A light guide used in a state disposed so as to cover an electro-optical panel substrate;

comprising a storing portion for storing an electronic part mounted on said electro-optical panel substrate and positioned so as to protrude from said electro-optical panel substrate.

42. A light guide according to Claim 41, wherein said storing portion is configured so as to be capable of storing said electronic part from either the front or rear side, and wherein another storing portion is provided so as to be capable of storing a light source from the other side, front or rear.

43. A light guide according to Claim 42, wherein said storing portion is configured so as to be capable of storing said electronic part

from either the front or rear side, and wherein said other storing portion is arranged to be capable of storing said light source from the other, front or rear side.

44. A light guide according to Claim 41, further comprising an abutting portion which abuts said electro-optical panel substrate for positioning.

45. A light guide according to Claim 44, further comprising an elastic holding portion for holding said electro-optical panel substrate against said abutting portion in said abutted state.

46. A light guide according to Claim 44, further comprising a recess structure containing said abutting portion, for storing said electro-optical panel substrate.

47. An electro-optical device, comprising:  
an electro-optical panel substrate;  
an electro-optical panel driving IC mounted onto said electro-optical panel substrate; and  
a holding member disposed along said electro-optical panel substrate so as to cover said electro-optical panel substrate;

wherein said electro-optical panel driving IC is positioned protruding from said electro-optical panel substrate, and said holding member has a recess for storing said electro-optical panel driving IC.

48. An electro-optical device according to Claim 47, wherein said holding member functions as a light guide.

49. An electro-optical device according to Claim 47, wherein a chip part is mounted to said electro-optical panel substrate, said chip part is positioned protruding from said electro-optical panel substrate, and a recess is formed on said holding member for storing said chip part.

50. An electro-optical device according to Claim 49, wherein said recess is a groove provided in said holding member.

51. An electro-optical device according to Claim 49, wherein at said recess, a light source is provided at said holding member side.

52. An electro-optical device, comprising:  
an electro-optical panel substrate;  
an electro-optical panel driving IC mounted onto said electro-optical panel substrate; and  
a holding member disposed along said electro-optical panel substrate so as to cover said electro-optical panel substrate;  
wherein said electro-optical panel driving IC is positioned

protruding from said electro-optical panel substrate, and said holding member has a notch provided from the outside at an area where said electro-optical panel driving IC is not situated.

53. An electro-optical device according to Claim 52, wherein said holding member functions as a light guide.

54. An electro-optical device according to Claim 52, wherein a light source is stored in said notch.

55. An electro-optical device, comprising:  
an electro-optical panel substrate;  
an electro-optical panel driving IC mounted onto said electro-optical panel substrate; and  
a holding member disposed along said electro-optical panel substrate so as to cover said electro-optical panel substrate;  
wherein said electro-optical panel driving IC is positioned protruding from said electro-optical panel substrate;  
and wherein said holding member has a hole provided at an area where said electro-optical panel driving IC is not situated.

56. A light guide disposed along an electro-optical panel substrate upon which an electro-optical panel driving IC is mounted, wherein said electro-optical panel driving IC is attached to said electro-optical panel substrate in a manner protruding therefrom, and

a recess is formed in a holding member for storing said protruding electro-optical panel driving IC.

57. A light guide disposed along an electro-optical panel substrate upon which an electro-optical panel driving IC is mounted,

wherein said electro-optical panel driving IC is attached to said electro-optical panel substrate in a manner protruding therefrom, and a notch is provided to said holding member from the outside at an area where said electro-optical panel driving IC is not situated.

58. An electro-optical device according to Claim 55, comprising a liquid crystal device wherein liquid crystal is provided between a pair of liquid crystal panel substrates which are said electro-optical panel substrates.

59. A liquid crystal device, comprising:

a pair of liquid crystal panel substrates with liquid crystal sandwiched therebetween;

an electronic part mounted to a substrate extension portion on at least one of said pair of liquid crystal panel substrates which extends further outwards than the outer shape of the other liquid crystal panel substrate; and

a holding member provided along said one liquid crystal panel substrate for covering said liquid crystal panel substrate;

wherein said electronic part is positioned so as to protrude from said substrate extension portion;

and wherein said substrate extension portion is covered with a protective material having a smooth surface;

and wherein said holding member is provided with a storing portion for storing said electronic part.

60. A method for manufacturing an electro-optical device according to Claim 30, wherein a liquid crystal device is manufactured by liquid crystal being provided between a pair of liquid crystal panel substrates which are said electro-optical panel substrates.

61. Electronic equipment comprising:

the electro-optical device according to Claim 1; and  
control means for controlling said electro-optical device.

62. Electronic equipment comprising: the liquid crystal device according to Claim 59; and control means for controlling said electro-optical device.